


FEMCard analysis result

20.10.15


Project data	
Projectname	viscoplastic_creep_relaxation_1D
Folder	F:\tmp_del\Demo_Projects\A_isotropic_material\B_viscoplastic_creep_relaxation\1D
Created at	07.06.2015
Maker	Parsolve GmbH
Comment	Synthetic measurement data
Material model	ISOTR 1D SMALL strain von MISES VISCOPLASTICITY (Cowper-Symonds, nonl. isotr. hardenin

Test informations


Test 1

Color	
Number	1
Name	Uniax_creep
Folder	F:\A_synth_meas\A_isotropic_material\B_viscoplastic_creep_relaxation\1D\Uniax_creep.txt
Load type	Isotropic time-dependent SMALL strain UNIAXIAL axial stress vs. axial strain
Weight T	6.44696

Test 2

Color	
Number	2
Name	Uniax_Relax_A
Folder	F:\A_synth_meas\A_isotropic_material\B_viscoplastic_creep_relaxation\1D\Uniax_Relax_A.txt
Load type	Isotropic time-dependent SMALL strain UNIAXIAL axial stress vs. axial strain
Weight T	1

Test 3

Color	
Number	3
Name	Uniax_Relax_B
Folder	F:\A_synth_meas\A_isotropic_material\B_viscoplastic_creep_relaxation\1D\Uniax_Relax_B.txt
Load type	Isotropic time-dependent SMALL strain UNIAXIAL axial stress vs. axial strain
Weight T	88.0167

Tests weight TR

Test 1		
Start	End	Value
0	633	2.87
634	1266	1.73

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1267	1900	1.41
1901	2533	1.23
2534	3167	1.09
3168	3800	1

Test 2		
Start	End	Value
0	50	70.7
51	100	23.6
101	1000	1
1001	1900	1
1901	1950	17.7
1951	2000	17.7

Test 3		
Start	End	Value
0	50	4
51	100	1.33
101	150	1
151	200	1
201	250	1
251	300	1

Tests weight SD

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Model parameter					
Parameter	Fix	Lower limit	Upper limit	Start value	Result
E		1000	300000	30000	11505.34
Y_0		10	200	40	27.69877
Y_inf		30	300	100	55.9391
Omega		50	800	200	178.7563
H		10	10000	1000	353.3061
D_pow		1e-06	10	0.001	3.56603e-05
n_pow		0.1	8	0.8	1.798494

Processing parameter	
Max. number of steps	200
LM start value	1
Max. error sum of squares	0.1

Processing results	
Steps	11
Least squares sum	0.0562683

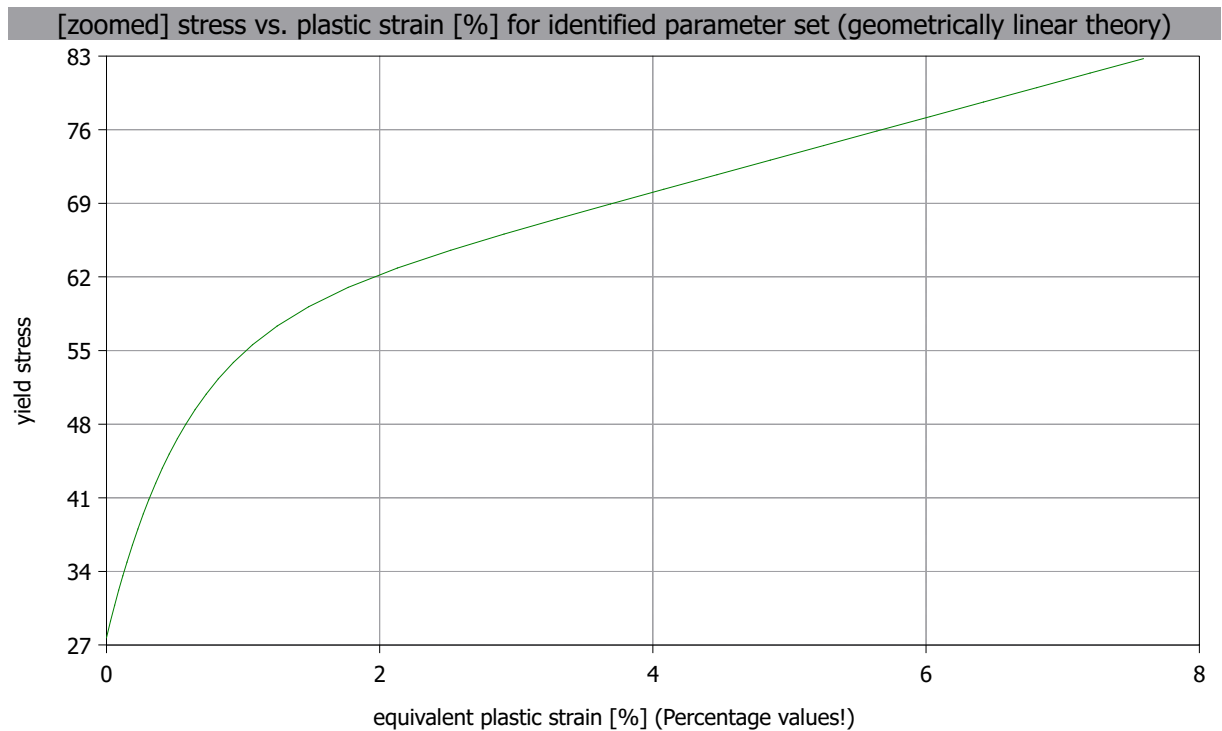
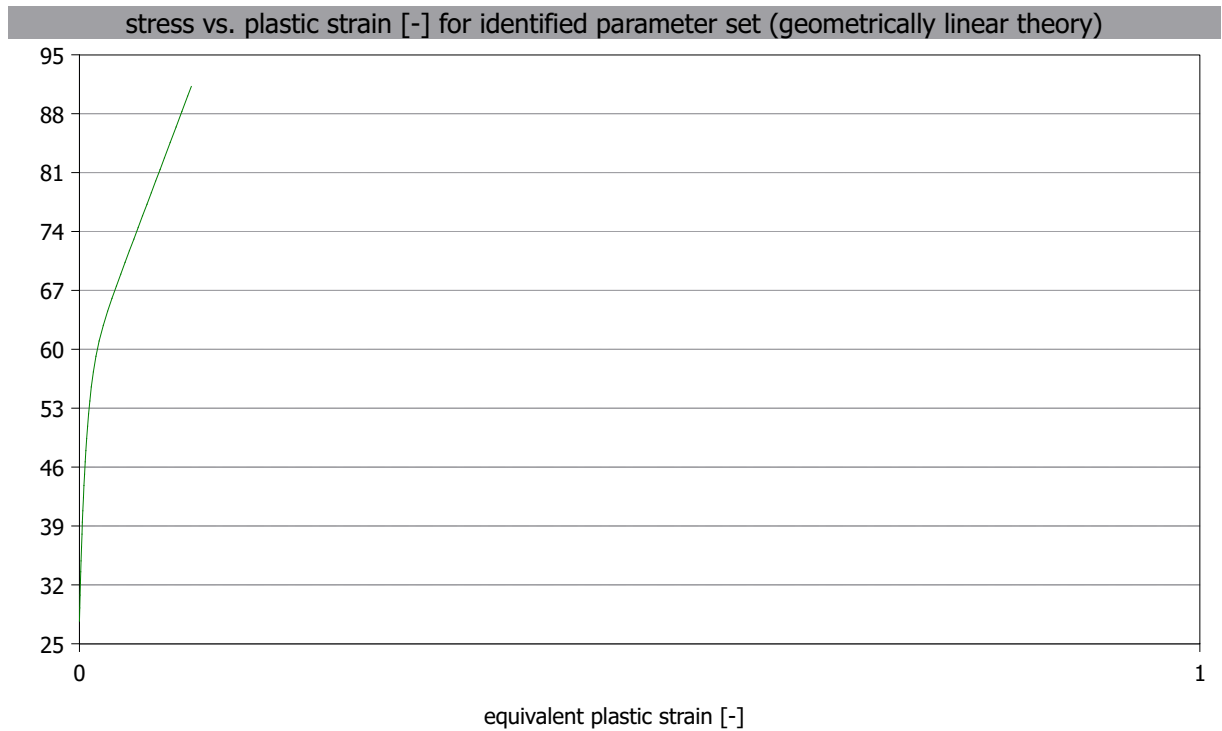
Correlation matrix							
	E	Y_0	Y_inf	Omega	H	D_pow	n_pow
E	1	-0.922	-0.376	0.246	-0.017	-0.629	0.6
Y_0	-0.922	1	0.594	-0.547	-0.219	0.666	-0.632
Y_inf	-0.376	0.594	1	-0.855	-0.706	0.67	-0.641
Omega	0.246	-0.547	-0.855	1	0.824	-0.324	0.322
H	-0.017	-0.219	-0.706	0.824	1	0.0427	-0.0755
D_pow	-0.629	0.666	0.67	-0.324	0.0427	1	-0.987
n_pow	0.6	-0.632	-0.641	0.322	-0.0755	-0.987	1

stress vs. plastic strain [-] for identified parameter set (geometrically linear theory)	
yield stress	equivalent plastic strain [-]
27.69877	0
29.27931	0.0003
30.78286	0.0006
32.21343	0.0009
33.57485	0.0012
34.87071	0.0015

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36.50245	0.0019
38.03134	0.0023
39.46448	0.0027
40.80848	0.0031
42.37245	0.0036
43.81781	0.0041
45.15469	0.0046
46.62876	0.0052
47.97447	0.0058
49.39958	0.0065
50.85963	0.0073
52.31572	0.0082
53.86831	0.0093
55.54888	0.0107
57.33228	0.0125
59.16401	0.0148
60.99927	0.0177
62.83749	0.0213
64.53015	0.0252
66.0648	0.0291
67.52076	0.033
68.93753	0.0369
70.33479	0.0408
71.72232	0.0447
73.10502	0.0486
74.4853	0.0525
75.86439	0.0564
77.24287	0.0603
78.62106	0.0642
79.9991	0.0681
81.37707	0.072
82.755	0.0759
84.59222	0.0811
86.42942	0.0863
88.26661	0.0915
90.1038	0.0967
91.23438	0.0999

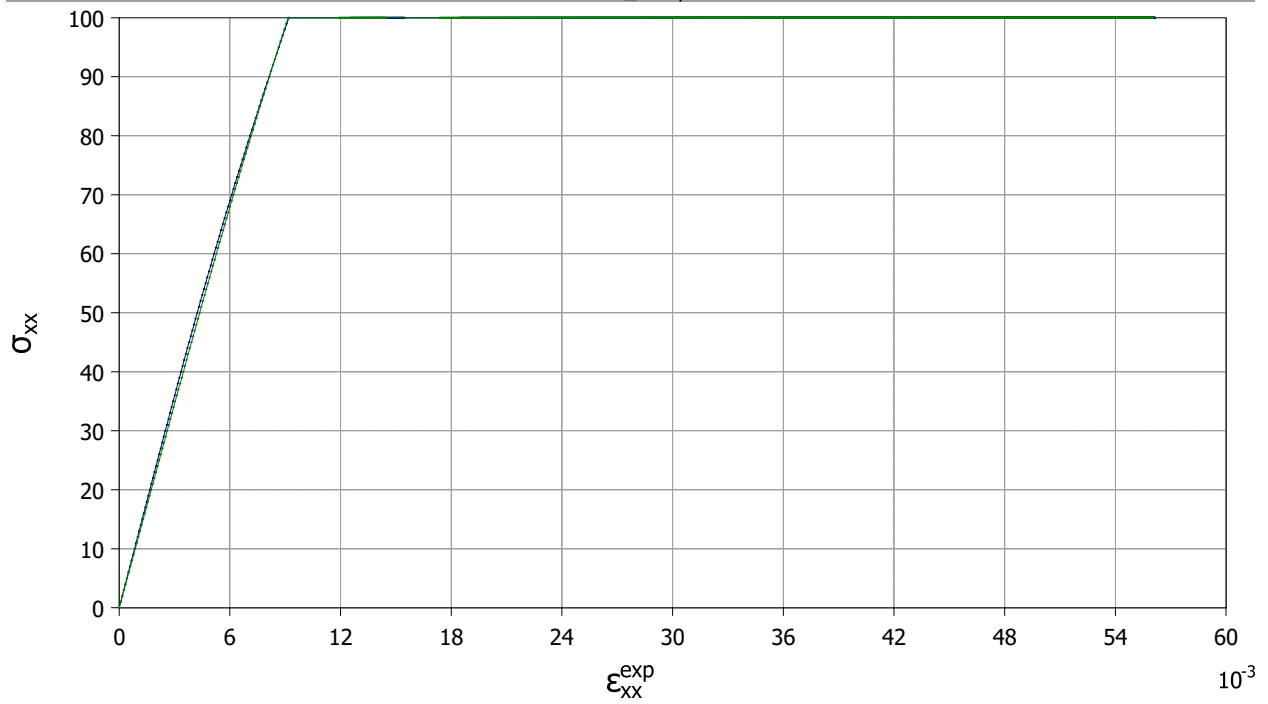


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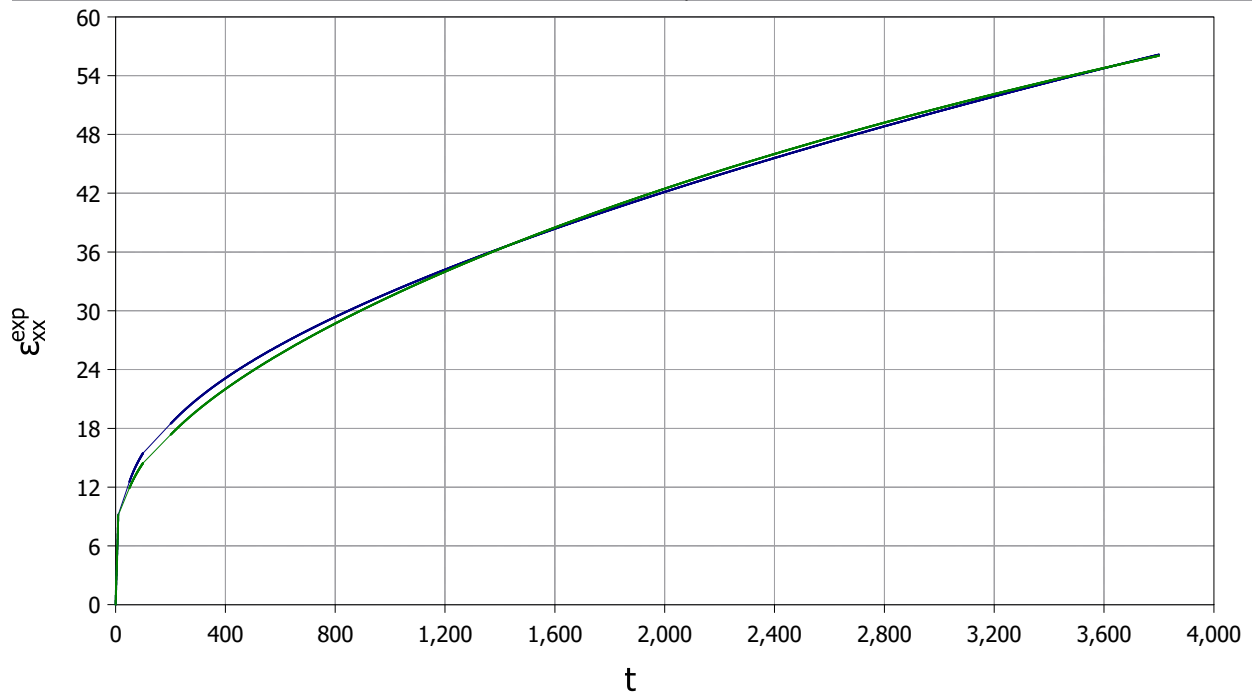
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Verification

Uniax_creep

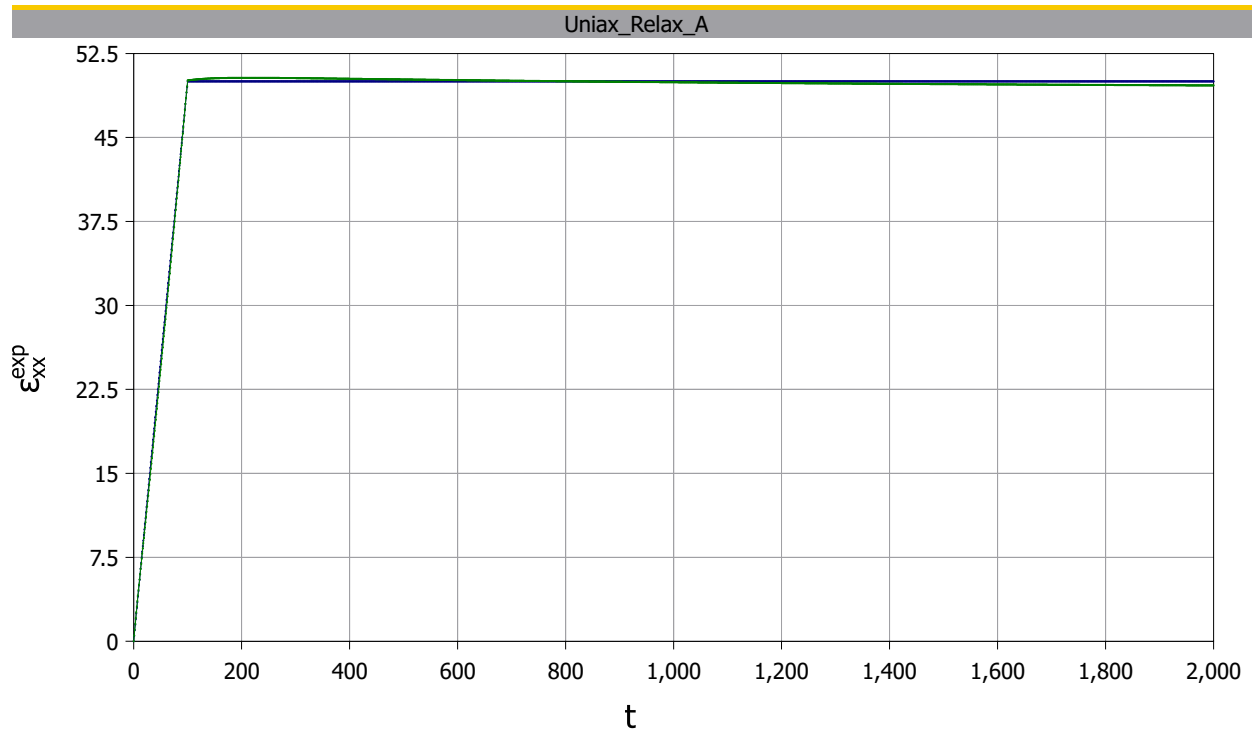
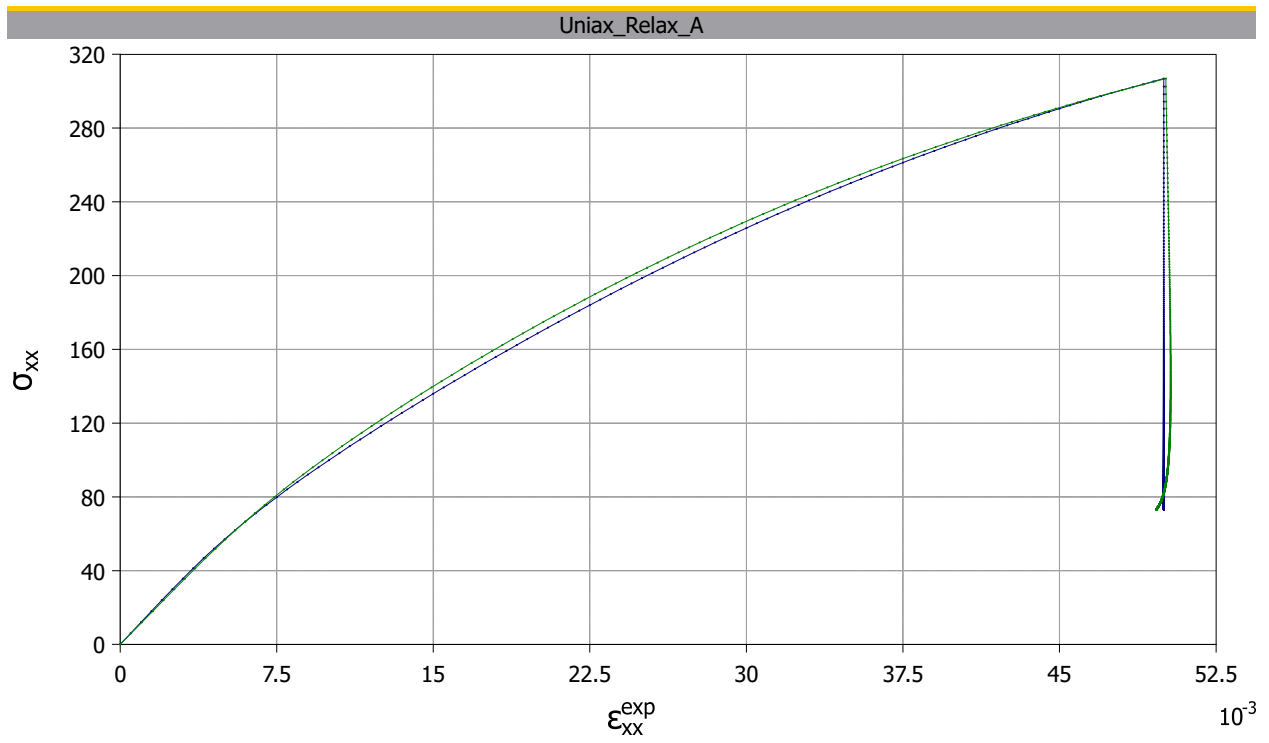


Uniax_creep



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